commonfund

Rethinking Endowment Spending

Foundation LEADERSHIP FORUM

AGB ASSOCIATION OF GOVERNING BOARDS OF UNIVERSITIES AND COLLEGES

1921-2011 | CELEBRATING 90 YEARS OF SERVICE

Verne O. Sedlacek, President & CEO, Commonfund

Foundation Leadership Forum
Hyatt Regency Coconut Point Resort AND SPA | Bonita Springs, FL
Monday, January 24, 2011

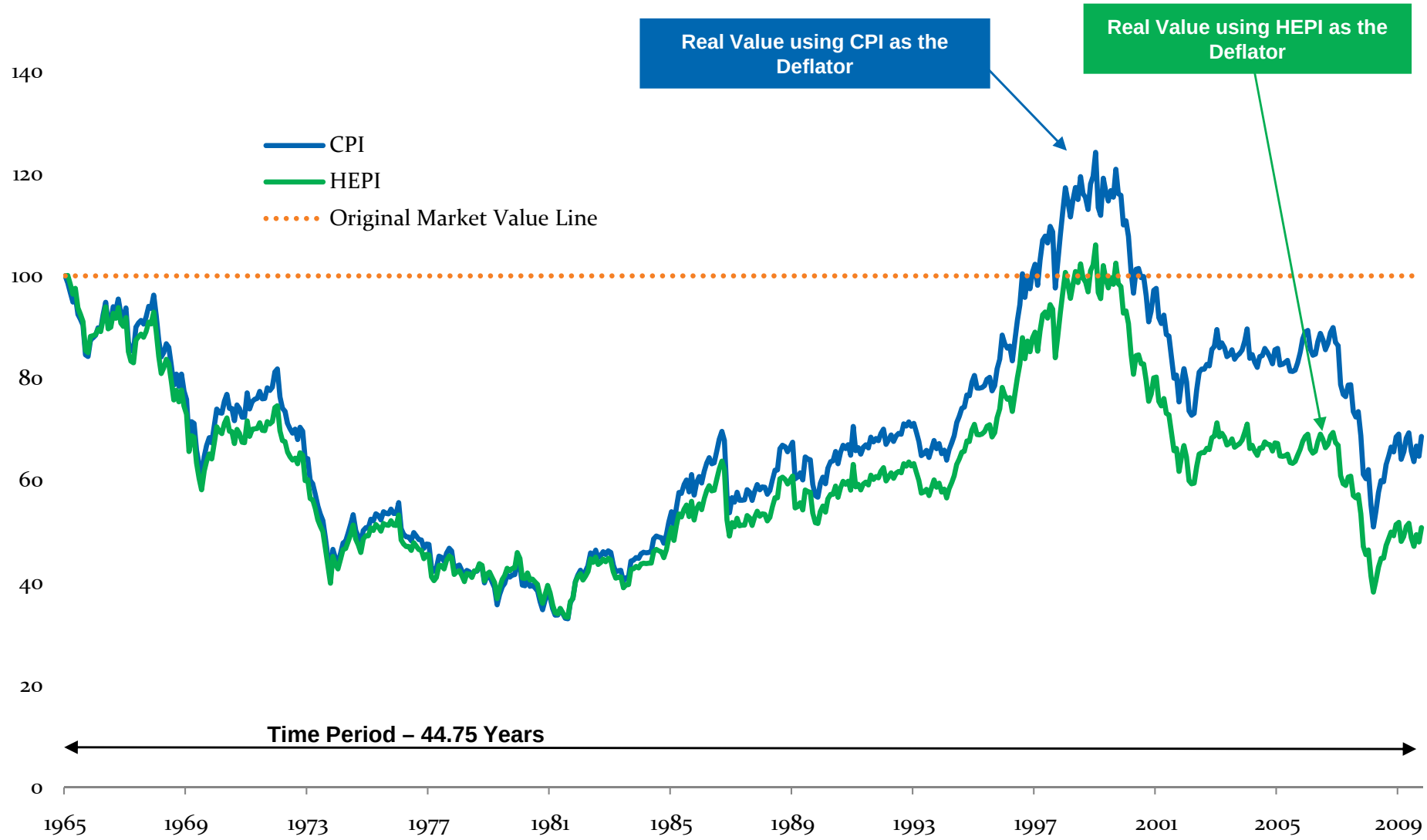
Intergenerational Equity

"The trustees of endowed institutions are the guardians of the future against the claims of the present. Their task is to preserve equity among generations."

- James Tobin
Yale University

Cumulative Inflation-Adjusted Performance

70% S&P 500, 30% Barclays U.S. Aggregate and 5% Spend (Hypothetical Portfolio)



Source: Ibbotson, Bloomberg, Commonfund Institute

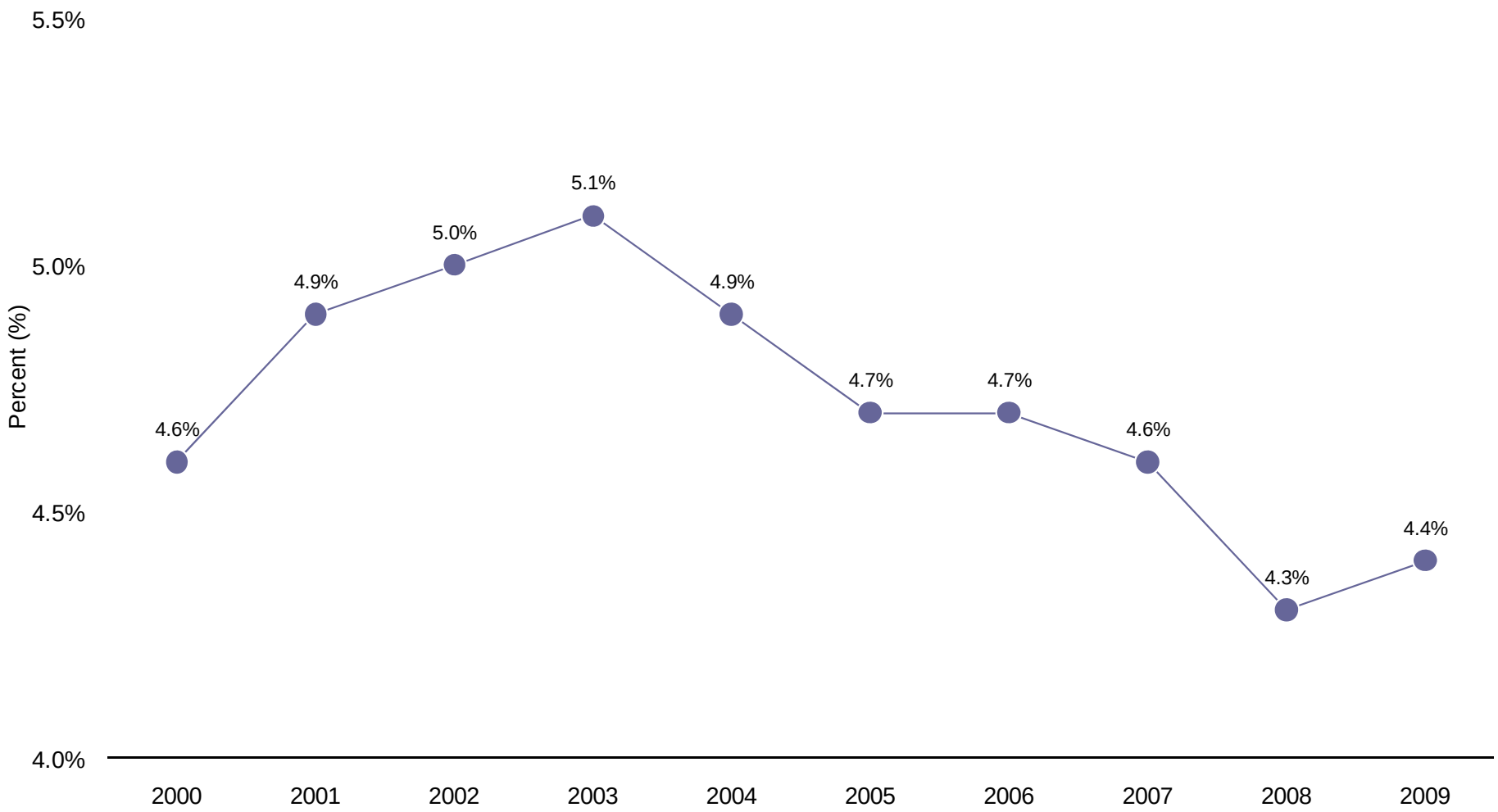
The equity portion of the hypothetical portfolio is based on monthly returns of the S&P 500 Index (12/65-9/10), and the fixed income portion is based on monthly returns of the Barclays U.S. Aggregate Index (01/73-9/10) and the Ibbotson Associates Long Term Corporate Bond Index (12/65-12/72). HEPI data from 07/06 to 6/10 is estimated using the Commonfund Institute method based on regression analysis. Returns for this hypothetical portfolio assume that it is rebalanced to 70/30 annually on 1/1/yy and 5% is distributed annually on 1/1/yr.

Policy Issues

	Intergenerational Equity	Median Spend	Volatility of Spending
Asset Allocation (increased diversification)	↑	↑	↓
Contributions (increased)	↑	↑	↓
Spending Rate (lower)	↑	↓	–
Spending Method (smoothing effect)	–	–	↓

Effective Spending Rates Remain Steady

Fiscal Years 2000 – 2009 ending June 30



Source: Fiscal years 2000 – 2007, NACUBO Endowment Study 2008; Fiscal years 2008-2009, NACUBO-Commonfund Study of Endowments 2009

What Spending Method Do You Use?
Spending Policy

Figure 5.4 Spending Policy♦ for Fiscal Year 2009

numbers in percent (%)	Total Institutions	Over $1 Billion	$501 Million–$1 Billion	$101–$500 Million	$51–$100 Million	$25–$50 Million	Under $25 Million
	842	52	60	219	164	137	210
Spend all current income	4	2	2	5	4	4	6
Percentage of moving average	74	56	70	75	82	79	68
Average percentage	4.8	4.9	4.9	4.8	4.8	4.8	4.6
Decide on appropriate rate each year	9	8	7	6	7	12	14
Grow distribution at predetermined inflation rate	1	4	0	2	0	0	0
Spend pre-specified percentage of beginning market value	4	0	0	2	5	7	6
Average pre-specified percentage spent	4.9	N/A	N/A	4.8	4.9	4.7	5.2
Last year's spending plus inflation with upper and lower bands	3	19	5	5	1	1	1
Weighted average or hybrid method (Yale/Stanford Rule)	6	15	12	7	7	4	2
Meet IRS minimum of 5 percent	♦♦	0	0	0	0	0	1
Other	9	13	13	9	7	4	12

♦*multiple responses allowed*
♦♦*less than 1 percent, results not meaningful*

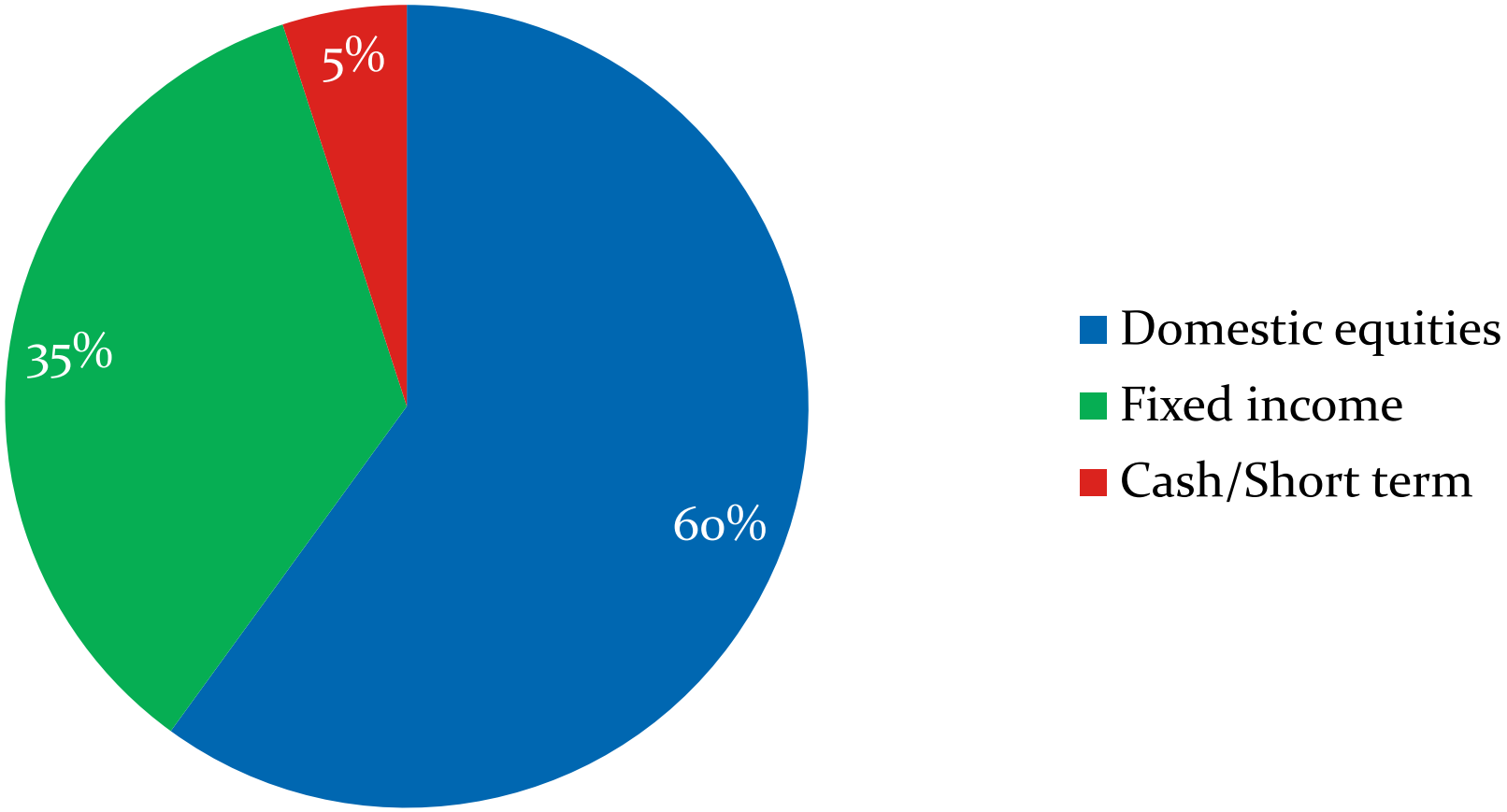
Source: Fiscal years 2000 – 2007, NACUBO Endowment Study 2008; Fiscal years 2008-2009, NACUBO-Commonfund Study of Endowments 2009

Spending Rate & Policy

What is the right long term rate?

Asset Allocation | University of Chinook

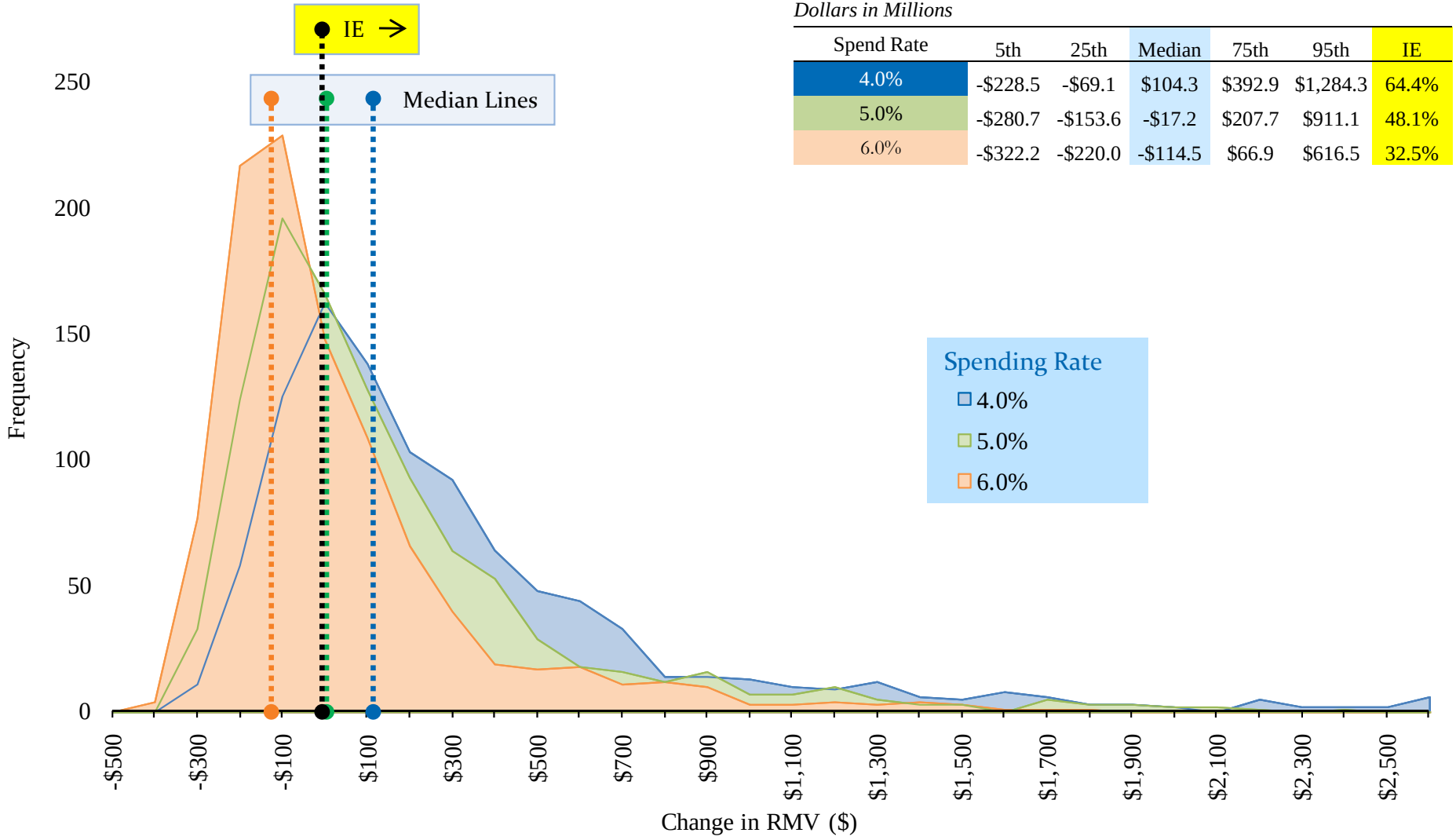
Hypothetical Example



Impact of a Change in Spending Rate | University of Chinook

Method – Year End Value | $0 Million Gifts | HEPI as Deflator

20 Years | Assets of $250 Million



Dollars in Millions

Spend Rate	5th	25th	Median	75th	95th	IE
4.0%	-$228.5	-$69.1	$104.3	$392.9	$1,284.3	64.4%
5.0%	-$280.7	-$153.6	-$17.2	$207.7	$911.1	48.1%
6.0%	-$322.2	-$220.0	-$114.5	$66.9	$616.5	32.5%

Distributions illustrated in chart are generated utilizing the Commonfund Allocation Planning Model™

IMPORTANT: The projections or other information generated by the APM regarding the likelihood of various investment outcomes are hypothetical in nature, do not reflect actual investment results and are not guarantees of future results. See APM notes at the end of this presentation.

Spending Methods

Spending Policy Examples

Spending Policy Approaches

Spending Policy Examples	Definition	Spending Equation	Spend
	5% SPENDING RATE WHERE APPLICABLE for EXAMPLES	Endowment Start at $100,000,000	
Traditional	Pre-specified percentage of moving average of market value – typically 5% of a three year moving average of beginning market values	Endowment x Rate	$5,000,000
Inflation Based	Increase spending each year based on rate of inflation (assume inflation of 3% prior year)	(Endowment x Rate) + Inflation Adjustment	$5,150,000
Income Based	Spend all current income (assume income of 4.5%)	Endowment Income (assume 4.5% income)	$4,500,000
Banded Inflation	Last year's spending plus an inflation rate, but bound by ranges, e.g. – no more than 6.5% nor less than 3.5% of Market Value.	Take Prior Year Spend * 1+ Current Inflation Rate. If calculated spending dollars are below Lower Band then default to Lower Band amount and if dollars are above Upper Band then default to Upper Band.	$5,150,000
Spending Reserve	Segregation of 5-10% of market value in separate account, invested in 90 day treasury bills. Reserve is drawn down when endowment performance is less than policy target		
Stabilization Fund	A fund created from endowment returns in excess of the target spending rate which is used to control the long run growth of the total endowment. The stabilization fund is invested alongside the endowment, but with a different (higher) spending rate.	(original endowment * spend rate) + (stabilization fund balance at end of previous fiscal period * spend rate)	
Yale Rule	The amount released under the spending rule is based on a weighted average of prior spending adjusted for inflation (80 percent weight) and the amount that would have been spent using 5 percent of current Endowment market value (20 percent weight).	Take Prior Year Market Value * Spending Rate times 20% plus prior year Spend *Inflation Rate times 80%	$5,120,000
Stanford Rule	The amount released under the spending rule is based on a weighted average of prior spending adjusted for inflation (60 percent weight) and the amount that would have been spent using 5 percent of current Endowment market value (40 percent weight).	Take Prior Year spend in dollars * 60% plus prior year Market Value* Target Payout Rate times 40%	$5,090,000

Spending Policy Examples | Traditional

Pre-specified percentage of moving average of market value – typically 5% of a three year moving average of beginning market values

Endowment x Rate at Year-End

$100,000,000 x 5.0% = $5,000,000

Spending Policy Examples | 3-Year Rolling Average

	Market Value	3Year-Avg		Rate	Spend
	Dollars (Millions)	*Dollars (Millions)*		*(Percent)*	*Dollars (Millions)*
Year -2	$85.0				
Year -1	$110.0				
Year 0	$100.0				
Avg		*$98.3*	*x*	*5.0%*	*$4.92*
Year 1	$80.0				
Avg		*$96.7*	*x*	*5.0%*	*$4.83*
Year 2	$82				
Avg		*$87*	*x*	*5.0%*	*$4.37*

Spending Policy Examples | Inflation Based

Increase spending each year based on rate of inflation
(assume inflation of 3% prior year, 5.3% year 2)

Endowment x Inflation Rate

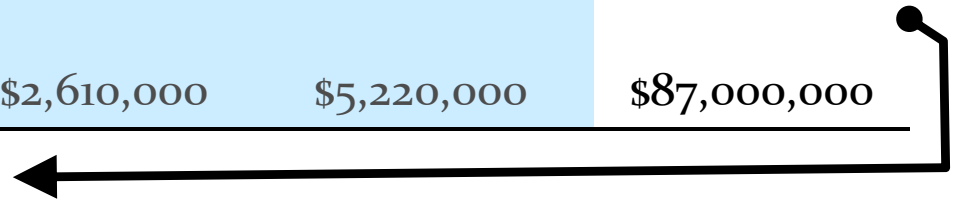
Year 1 $100,000,000 x 5.0% x 1.03% = $5,150,000

Year 2 $5,150,000 x 1.053% = $5,422,950

Spending Policy Examples | Banded Inflation

Prior year's spending plus an inflation rate factor, bound by an upper and lower band.
(assume inflation of 5.3% in Year 1 and 7.5% in Year 2
with a lower band of 3% and an upper band of 6%)

		Lower Band (3%)	Upper Band (6%)	Asset Value
Year 1	$5,000,000			$100,000,000
Year 2	$5,000,000 x 1.053 = $5,265,000	$3,300,000	$6,600,000	$110,000,000
Year 3	$5,265,000 x 1.075 = $5,659,875	$2,610,000	$5,220,000	$87,000,000



Spend $5,220,000

Spending Policy Examples | Yale Rule

The amount released under the spending rule is based on a weighted average of prior spending adjusted for inflation (80 percent weight) and the amount that would have been spent using 5 percent of current Endowment market value (20 percent weight). (assume $100,000,000 endowment, 3% inflation and prior years spend of $5 million)

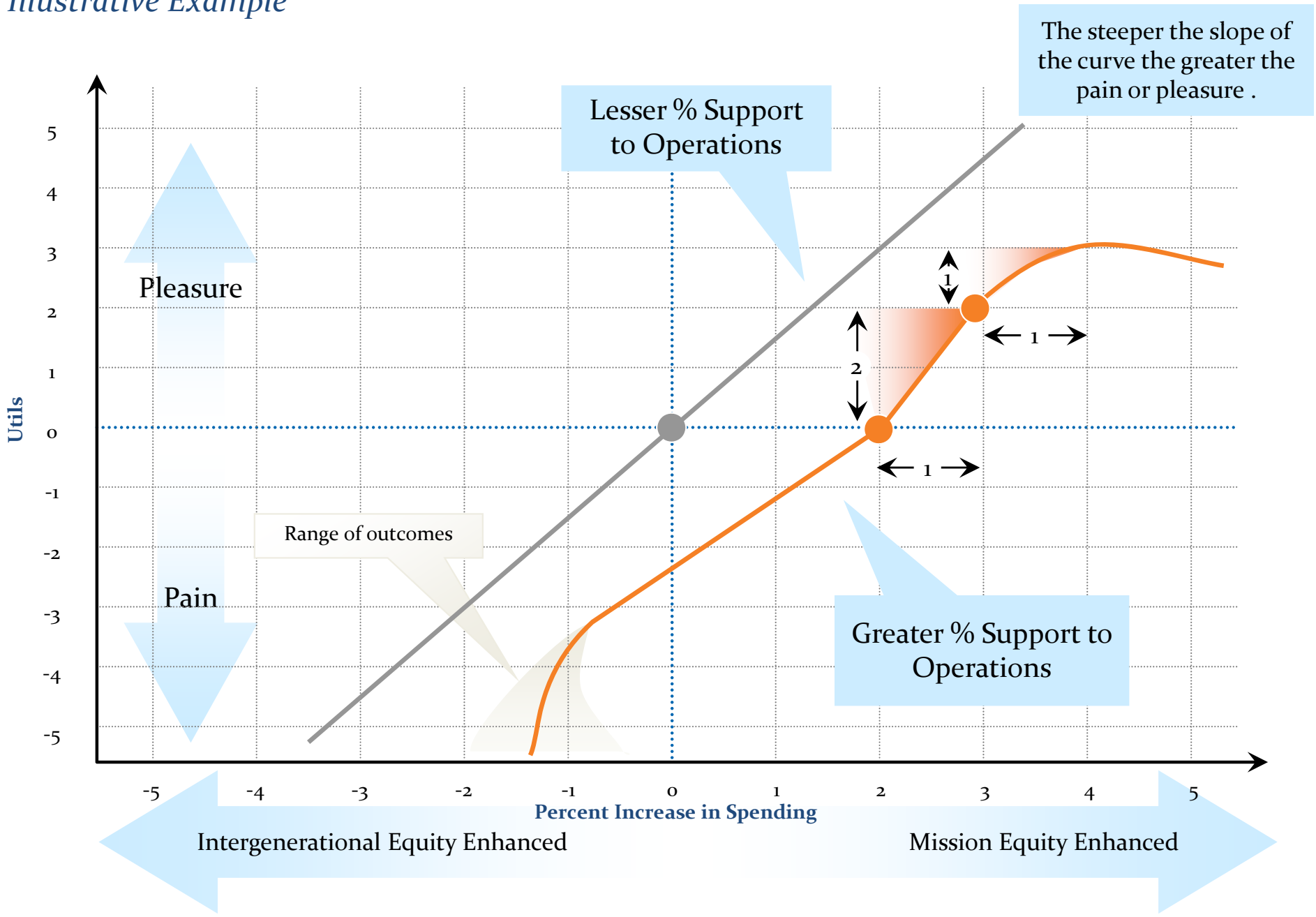
$$[\{(\text{Prior Year Spend}) \times (\text{Inflation Rate} + 1)\} \times 80\%] + [\{(\text{Endowment}) \times (\text{Spending Rate})\} \times 20\%]$$

$$[\{(\$5{,}000{,}000) \times (3.0\% + 1)\} \times 80\%] + [\{(\$100{,}000{,}000) \times (5.0\%)\} \times 20\%]$$

$$= \$5{,}120{,}000$$

Spending Utility Curve Analysis

Illustrative Example



Spending Policy Examples | Utility Curve

		Market Value *Dollars (Millions)*	3Year-Avg *Dollars (Millions)*		Rate *(Percent)*	Calculation *Dollars (Millions)*	Actual *Dollars (Millions)*		Reserve *Dollars (Millions)*
						Spend (up 3.5% to down 1.0%)			
Year	-3	$90.0							
Year	-2	$85.0							
Year	-1	$110.0	$95.0	x	5.0%	$4.75	$4.75		$0.00
Year	0	$100.0	$98.3	x	5.0%	$4.92	$4.92		$0.00
Year	1	$80.0	$96.7	x	5.0%	$4.83	$4.87	(dn 1)	-$0.04
Year	2	$82	$87.3	x	5.0%	$4.37	$4.82	(dn 1)	-$0.49

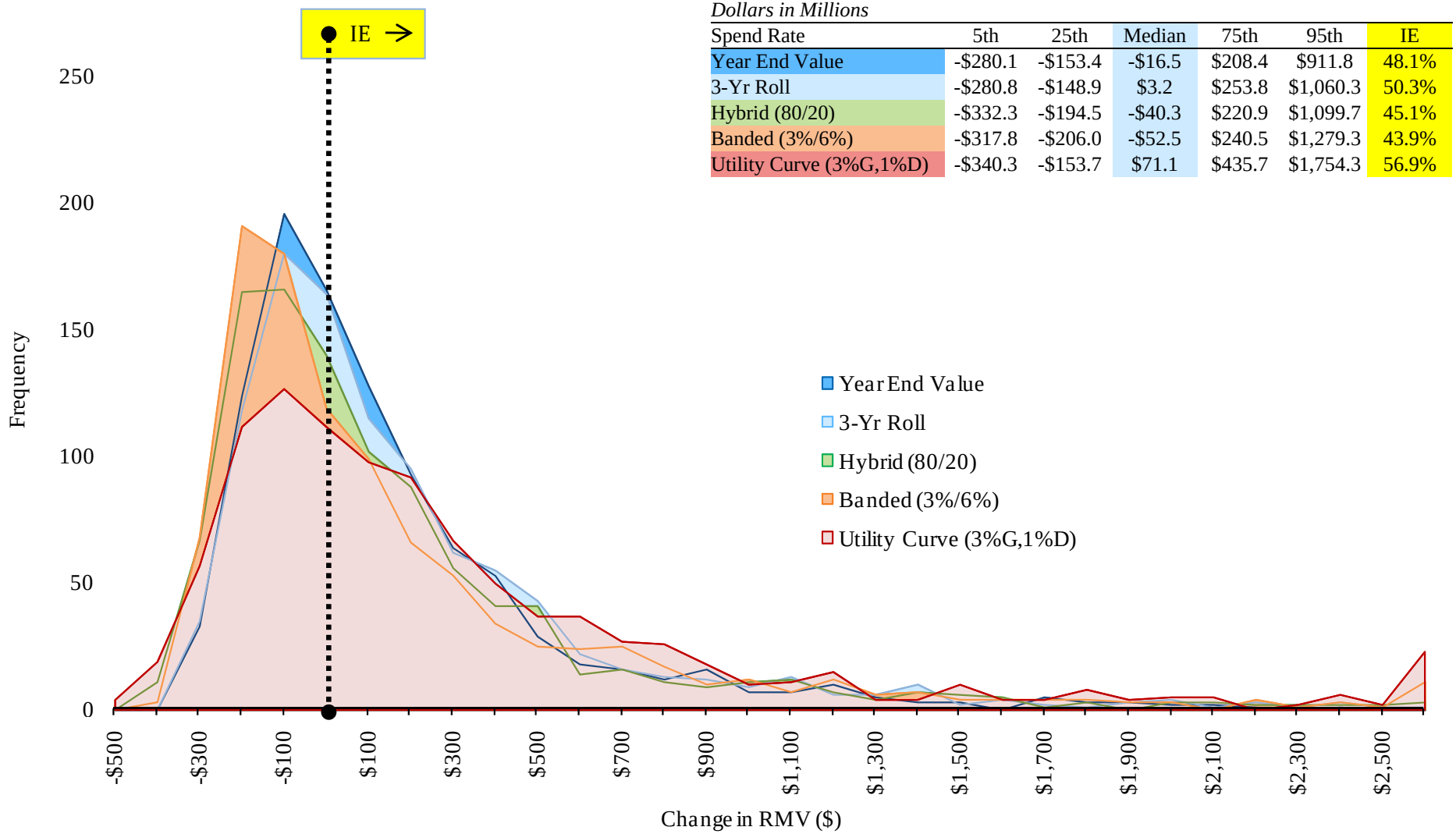
Impact of a Change in Spending Method | University of Chinook

Rate – 5.0% | $0 Million Gifts | HEPI as Deflator

20 Years | Assets of $250 Million

Dollars in Millions

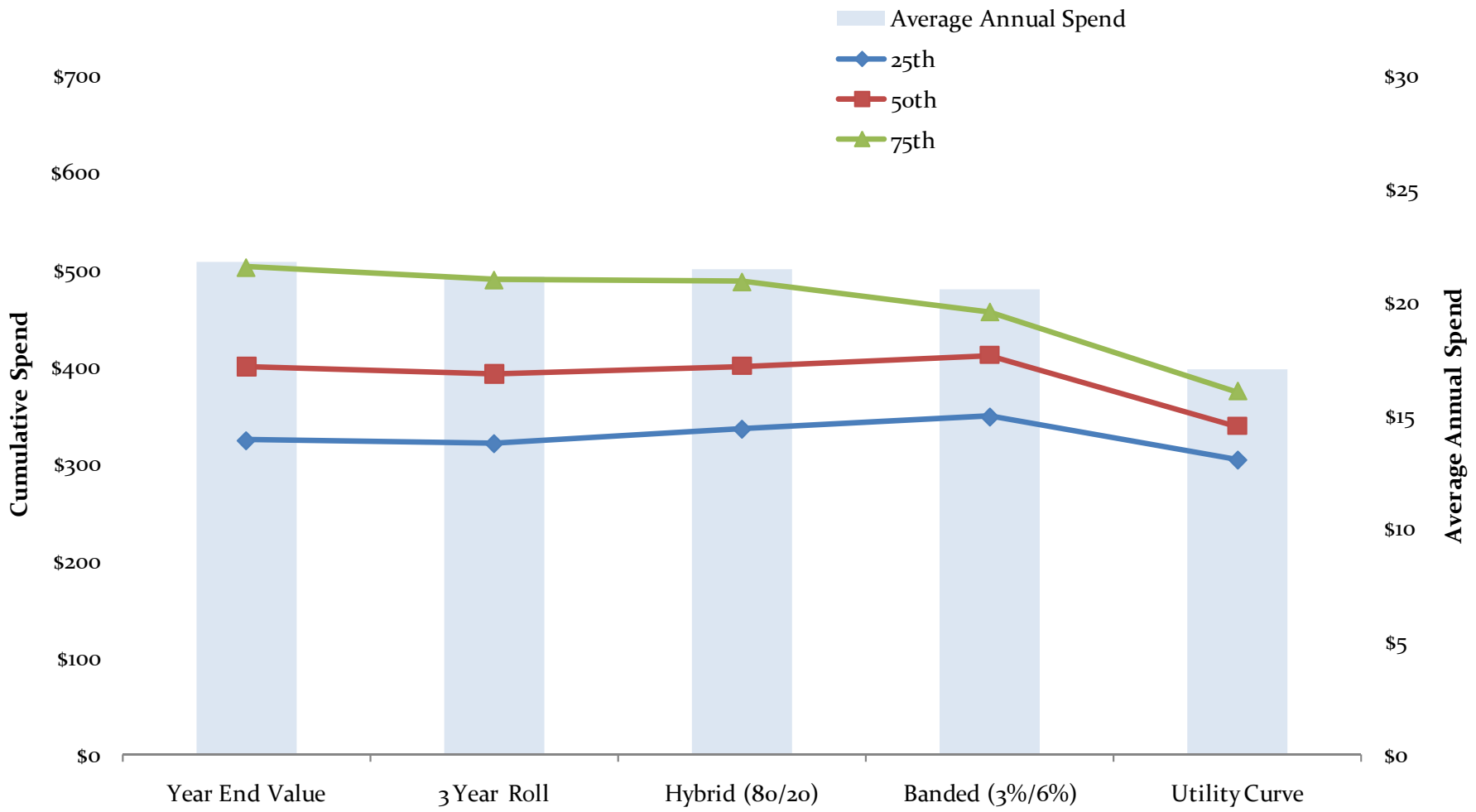
Spend Rate	5th	25th	Median	75th	95th	IE
Year End Value	-$280.1	-$153.4	-$16.5	$208.4	$911.8	48.1%
3-Yr Roll	-$280.8	-$148.9	$3.2	$253.8	$1,060.3	50.3%
Hybrid (80/20)	-$332.3	-$194.5	-$40.3	$220.9	$1,099.7	45.1%
Banded (3%/6%)	-$317.8	-$206.0	-$52.5	$240.5	$1,279.3	43.9%
Utility Curve (3%G,1%D)	-$340.3	-$153.7	$71.1	$435.7	$1,754.3	56.9%



Distributions illustrated in chart are generated utilizing the Commonfund Allocation Planning Model™
IMPORTANT: The projections or other information generated by the APM regarding the likelihood of various investment outcomes are hypothetical in nature, do not reflect actual investment results and are not guarantees of future results. See APM notes at the end of this presentation.

Cumulative Spend over 20 Years and Average Annual Spend

$0 Million Gifts | HEPI as Deflator



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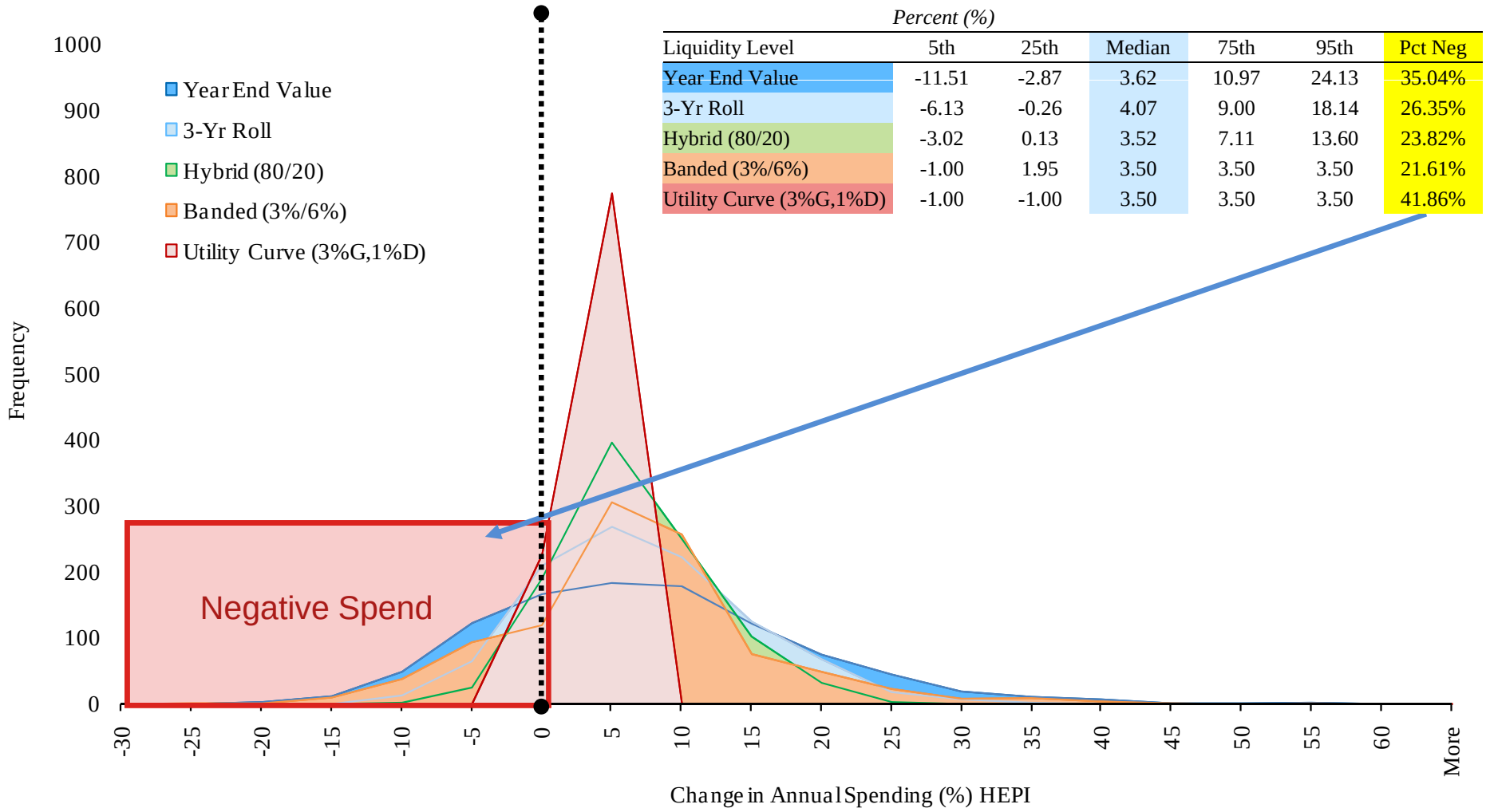
Volatility of Spend | Percent Change in Annual Spending

5.0% Spend | $0 Million Gifts | HEPI as Deflator

Percent Negative

Liquidity Level	*Percent (%)* 5th	25th	Median	75th	95th	Pct Neg
Year End Value	-11.51	-2.87	3.62	10.97	24.13	35.04%
3-Yr Roll	-6.13	-0.26	4.07	9.00	18.14	26.35%
Hybrid (80/20)	-3.02	0.13	3.52	7.11	13.60	23.82%
Banded (3%/6%)	-1.00	1.95	3.50	3.50	3.50	21.61%
Utility Curve (3%G,1%D)	-1.00	-1.00	3.50	3.50	3.50	41.86%



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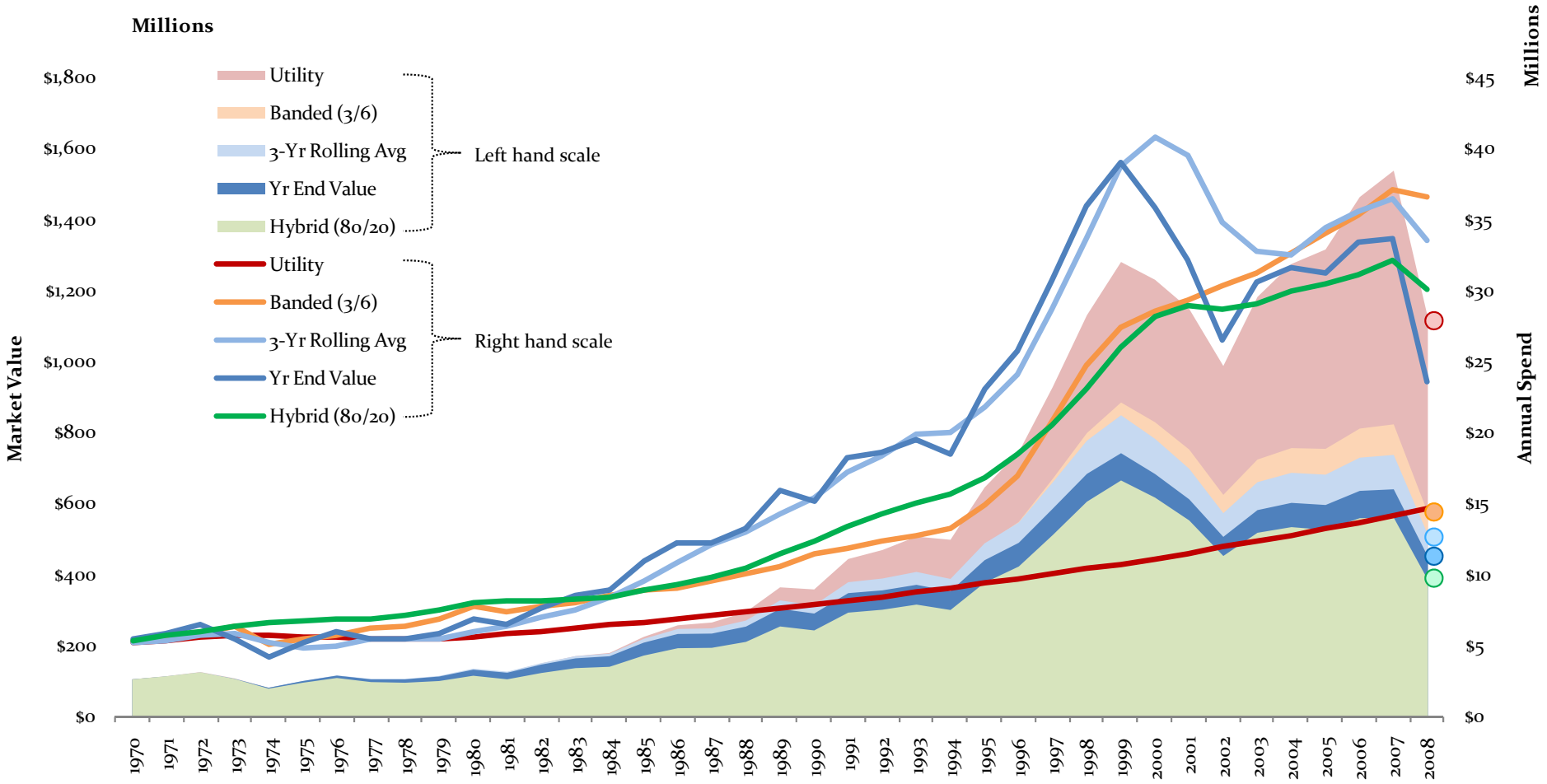
Cumulative Effect of Different Spending Methods | 1970 to 2008

Using a 5% Spending Rate, $100,000 portfolio

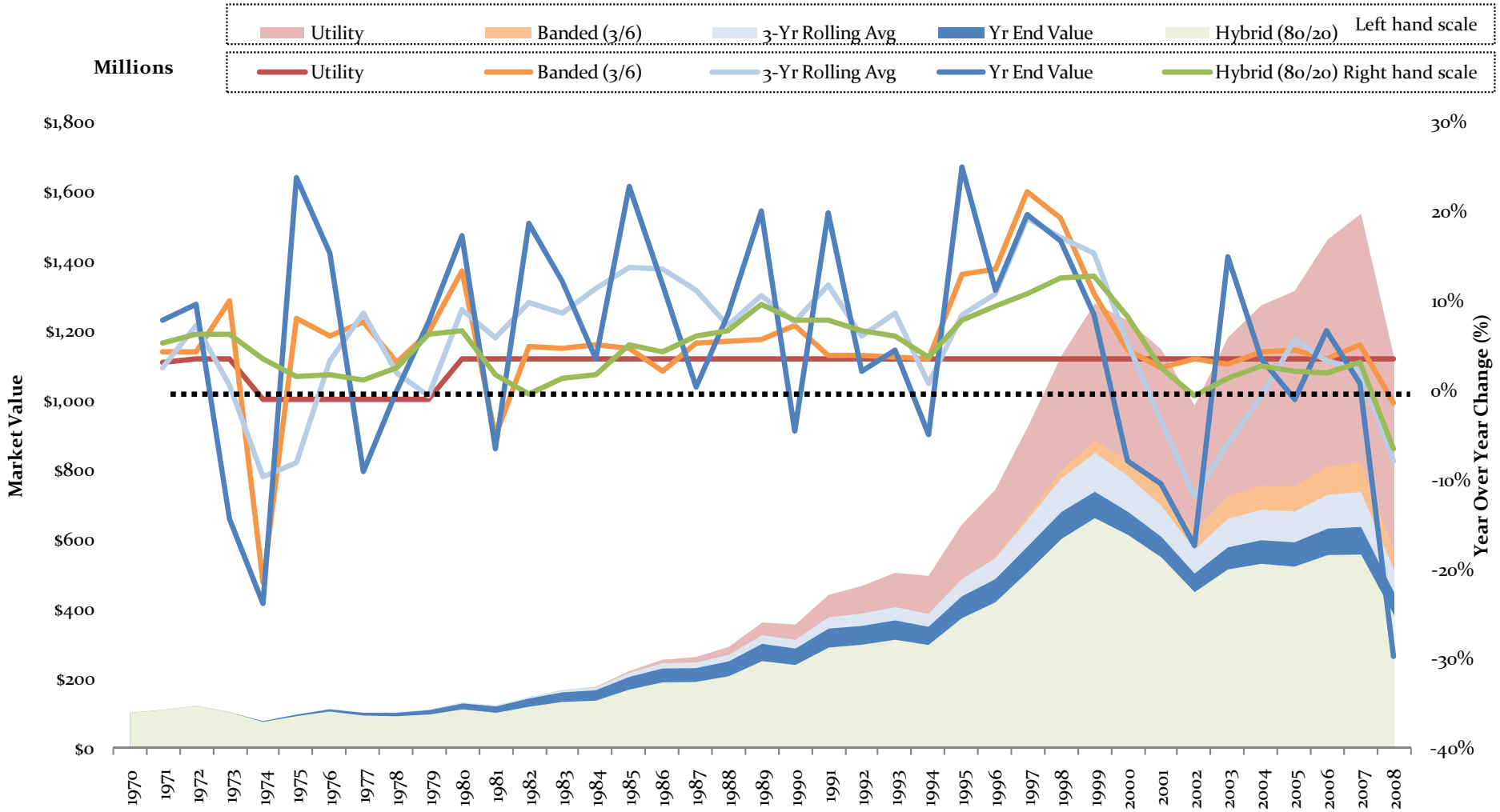


Source: Ibbotson, Bloomberg, Commonfund Institute

The equity portion of the hypothetical portfolio is based on monthly returns of the S&P 500 Index (12/65-12/2008), and the fixed income portion is based on monthly returns of the Barclays Capital U.S. Aggregate Index (01/73-12/2008) and the Ibbotson Associates Long Term Corporate Bond Index (12/65-12/72). Returns for this hypothetical portfolio assume that it is rebalanced to 70/30 annually on 1/1/yy and 5% is distributed annually on 1/1/yy.

Annual Effect of Different Spending Methods | 1970 to 2008

Using a 5% Spending Rate, $100,000 portfolio



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Questions to Address

- Who should set the spending rate?
- What are the needs of the institution?
- How should the spending rate be determined?
- What is the impact of giving?
- What is the effect of restricted versus unrestricted?
- What spending method should you use?
- What inflation rate should you use?
- How should you handle special distributions?

Commonfund Allocation Planning Model™

APM is only a model. The returns depicted by the APM are hypothetical and do not represent the actual returns earned by any investor or investment fund or product. The APM does not guarantee or assure any future investment results.

What is the APM? The APM is an analytic tool that can assist investors in thinking about the potential distribution of returns of various investment strategies.

What isn't the APM? The APM should not be treated as a recommendation concerning any specific investment or asset class, or any mix thereof, or as a tool that can predict specific investment outcomes.

How does the APM work? The APM takes today's yield curve, uses Monte Carlo simulation to project 1,000 different yield curves for next year by changing economic factors that affect the curve, and projects returns for each of 19 asset classes in each of the "new" yield curve environments. The projected returns are based on the regression of the historical relationship between these asset classes and the yield curve. The model then takes each of the 1,000 "new" yield curves as the next starting point and repeats the process, building another 1,000 yield curves, and projecting returns in those environments. The model runs these simulations for twenty years into the future.

The APM doesn't account for fees and expenses. The return distributions calculated by the APM are based on historical data of the performance of specified market indexes. This data does not take into account the impact of investment fees and expenses. In the case of an actual investment portfolio, fees and expenses would reduce returns (to the extent that they exceeded any performance above the relevant index returns generated by active management strategies.)

The APM's output will vary. The APM's output will vary with each use (based upon changes in input assumptions and in the historical performance data on which the APM output is based) and over time.

Investment Risks: The investment asset classes depicted in the APM involve varying degrees of investment risk. Alternative assets in particular may involve reduced liquidity and risky investment strategies. Investors in any of these asset classes could lose some or all of their principal. In particular cases (including investments on margin, short selling and similar strategies), investors could lose more than their principal investment. See the explanatory notes at the end of this presentation.

Definitions and details: Certain terms used in the following presentation (such as "intergenerational equity" and "real return environment"), together with complete details of the assumptions underlying the APM, are included in the explanatory notes at the end of this presentation.

IMPORTANT: The projections or other information generated by the Allocation Planning Model™ regarding the likelihood of various investment outcomes are hypothetical in nature, do not reflect actual investments and are not guarantees of future results. Results may vary with each use and over time. See APM Explanatory Notes at the end of this presentation.

APPENDIX

Commonfund Allocation Planning Model™

IMPORTANT: The projections or other information generated by the APM regarding the likelihood of various investment outcomes are hypothetical in nature, do no reflect actual investments and are not guarantees of future results.

A financial forecasting tool that, based on the regression of historical data, simulates future economic scenarios and asset class returns within those economic scenarios.

Term Structure model that uses Monte Carlo simulation to project future yield curves (economic environments) for up to 20 years.

Model calculates asset class results relative to the projected yield curves

Starting point of the simulations is the US yield curve as of December 31 2008

- 30 Day T- Bill 0.01%
- 1yr BBB Corp Bond 5.81%
- 10yr Tsy Note 2.214%
- 10yr BBB Corp Bond 7.95%

Monte Carlo simulation - changing 5 factors (inflation, Gross Domestic Product (GDP), short term and long term treasury and corporate yields) to project different possible economic scenarios

- 1,000 scenarios for each year in a 20 year period
- Model projects annual returns for each asset class for each year for each scenario
- Each asset class has 20,000 projected annual returns (1,000 scenarios times 20 years)

Model generates Total Portfolio results over 5, 10, 15, and 20 years

- Returns (real, nominal)
- Market values (real, nominal)
- Spending values

Intergenerational Equity is calculated as the state in which the nominal market value (after spending) is equal to or greater than the inflation adjusted market value (grown at CPI or HEPI). When the net market value is 0, the portfolio has maintained real purchasing power or equilibrium.

Skewness explains to what degree, positively or negatively, the distribution median is shifted from the average.

- Measured using Pearson's coefficient: 3*(Mean - Median) / Standard Deviation

Commonfund Allocation Planning Model™

Commonfund's Allocation Planning Model (APM)

Commonfund's Allocation Planning Model ("APM") is a proprietary financial simulation tool that can help investors understand the expected outcomes and potential risks of an investment strategy and the interrelationships of the underlying asset classes comprising that investment strategy.

Commonfund's APM is a forward-looking, yield curve-based model that simulates potential future economic scenarios and asset class returns within those economic scenarios. The APM can therefore help investors examine portfolio choice alternatives under different conditions of economic uncertainty on a forward-looking basis.

How does it work?

The APM is, at the core, a "term structure model." That is, the model is based on the term structure of the interest rates. We believe that the investment returns of the asset classes included in the model have been and will continue to be a function of the economic environment and in particular, changes in the yield curve. Fundamentally there are two principal processes at work in the APM: simulating the term structure and defining the asset classes in terms of their historical relationship to the factors of the term structure and the individual asset classes.

Simulating the Term Structure:

Our model takes a starting yield curve (defined on the previous page) and uses Monte Carlo simulation to project 1,000 different yield curves each year for 20 years. This is accomplished by changing the factors that affect the curve including:

- Inflation
- Gross Domestic Product (GDP)
- 30 day U.S. T-Bill
- 10 Year U.S. Treasury Note
- 1 Year BBB Corporate Yield
- 10 Year BBB Corporate Yield

The Monte Carlo simulation that is used in the APM generates random economic conditions that change the yield curve. These changes can be aggressive and incorporate literally thousands of scenarios of low inflation - high GDP growth, low inflation - low GDP growth, high inflation - low GDP growth, etc.

However, the evolution of the yield curve in each scenario will not generate in one year drastic or "unreasonable" changes such as a change in one year from negative inflation (deflation) to hyperinflation.

Calculating the Asset Class Returns:

The second fundamental process in the APM is generating projected asset class returns for each term structure scenario. This process begins with the selection of a representative index for each asset class. Data may go back as far as 1970 for certain indices but only as recently as 1993 for newer indices. Where no representative index exists, we have used historical data from Commonfund's experience as an investor in this particular asset class (e.g. natural resources). Each asset class' returns are then regressed against the term structure model. The regression analysis generates excess returns assumptions for each asset class relative to the term structure model. These excess returns are then used to construct a variance/covariance matrix that includes all asset classes, further defining them against the term structure model as well as to each other.

Essentially this matrix determines how the returns fit together. The covariance part of the matrix defines how asset class returns move relative to each other and the variance is the dispersion of the returns, or how far they vary relative to each other. Using the excess returns and variance/covariance matrix for the asset classes, the model is able to project how each asset class is expected to perform in each term structure scenario.

Our model takes the starting yield curve, uses Monte Carlo simulation to project 1,000 different yield curves for the next year by changing economic factors that affect the curve, and projects returns for 20 different asset classes in each of the new yield curve environments. The model then takes each of the 1,000 new yield curves as the next starting point and simulates a new yield curve, building another 1,000 yield curves for the next period, and projecting returns in those environments. In order to have the ability to focus on the long term, the model runs these simulations for twenty years into the future and therefore effectively generating 20,000 data points (returns) for each asset class.

What can you do with it?

Commonfund's APM generates a distribution of potential outcomes simulated across thousands of different economic scenarios for given asset allocations. Every simulation describes a potential future trajectory of the economy and projects how the asset classes will perform based on the regression of historical data.

continued on next page

Commonfund Allocation Planning Model™

Analyzing the distribution of thousands of returns, the model can derive statistical summaries including medians, standard deviations and percentiles for different outcomes for each asset class. With 20 year projections, we can calculate model annualized returns, medians, standard deviations, market values, and percentiles for different outcomes for entire portfolios over 5-year, 10-year, 15-year, and 20-year time periods. We are able to see the effects of compounding, in terms of both return and risk, as well as examine the "tail risk" of the distribution.

As a tool, the APM aids Commonfund in discussions with investors regarding their asset allocation decisions. It helps us think about how changing, adding, or removing an allocation to any given asset class will affect the risk-return profile of a portfolio. In addition, spending policies, gifts, and capital campaigns are important considerations in decision-making and are also incorporated into the model.

With the Commonfund APM, investors also have the ability to ask what if questions like "given a specific asset allocation and spending rate (or distribution), what is the model-generated probability of not achieving intergenerational equity or a stated investment objective over a defined period of time?" By focusing on determining how often, in terms of number of times in a random model, the nominal market value (after spending) is equal to or greater than the inflation-adjusted market value (grown at inflation only), an investor can gain valuable insight into the portfolio's APM-generated probability of achieving intergenerational equity. By incorporating cash flows into the model like inflows from gifts and capital campaigns, and outflows from spending, distributions, or grants investors are able to understand the long –term ramifications of current asset allocation policies and cash flow situations and can gain valuable insight to help with forecasting their budgets.

How does the APM compare to other forecasting models?

Ultimately, the power of a model that incorporates Monte Carlo simulation lies in the ability to produce a range of returns and generate meaningful statistical analysis from the distribution. With historical-based inputs and/or user inputs, a mean variance optimization model can only produce an efficient frontier along which reside optimal portfolios for a given expected return and standard deviation. The APM, in contrast, considers asset allocations from the user's perspective and then generates projected returns, standard deviations, distributions, and probabilities associated with that asset allocation. With this type of analysis, the user is able to understand the likelihood of achieving goals rather than merely focusing on a median and standard deviation of an "optimal" portfolio produced by a mean variance optimization.

The APM has many advantages over mean variance optimization. In addition to generating a distribution of potential outcomes and different economic scenarios as described above (which cannot be accomplished with mean variance optimization), the APM's term structure model has advanced features that distinguish it from most other forecasting models that use Monte Carlo simulation. The model consistently simulates the term structure of interest rates at every point in simulation time, which provides a more realistic set of the expectations that drive interest rates and a better formulation of the documented dynamic properties of inflation and interest rates.

The APM simulates four term structure components whereas other models known to incorporate term structure models simulate only one or two. Finally, the open design architecture of the APM makes it relatively easy to update and further develop.

The APM has been designed to be a state-of-the-art investment-planning tool. Although no analytical model can completely replace informed professional judgment, the APM can provide a better foundation on which to base that judgment.

What are the limitations?

No model or simulation can predict the future or account for the infinite number of possible outcomes. The projections generated by Commonfund's APM are based on assumptions about performance and risk characteristics of various asset classes. Those assumptions are based on historical data that are believed to be accurate and on which the APM relies. The utility of the APM depends greatly on the accuracy of that historical data and its meaningfulness in simulating future events. Commonfund cannot guarantee the accuracy of the data nor does it represent that the data will necessarily represent market conditions in the future.

The model simulates the range of probable outcomes over a 20-year time horizon of varying combinations of asset allocations, inflation expectations, spending policies, capital gifts and rebalancing rules. The reasonableness of the input assumptions made by the user will affect the reasonableness of the simulations. In all cases, the statistical confidence in the predictions falls as the simulation period gets shorter.

The results of the model will vary with any change to the inputs: asset allocation, spending rates or methods, contributions, or beginning market value. The results will also change with any periodic updates to the model starting point.

Because the model uses asset class returns, it should not be used to evaluate or simulate the results of any specific investment program (or fund).

continued on next page

Commonfund Allocation Planning Model™

No APM simulation can replicate the exact experience of an institution. As such, the results of the APM should only be used as a general guide. In no way should the APM be a substitute for the important policy choices that an institution must make in developing its investment program.

The asset classes in the model are defined by index data and do not reflect the impact, either positive or negative, of active management or the fees associated with active management. Asset classes not included in the model, or other indices not used to represent the asset classes used in the model, may have characteristics similar or superior to those being analyzed.

Key Terms

Frequency distribution: shows the number of observations within the ranges as defined by the horizontal axis.

High volatility and Medium volatility hedged equity: an investing strategy that consists of a core holding of long equities hedged at all times with short sales of stocks and/or stock index options. Depending on the mix of long and short positions the portfolio may have either a long or short bias. Not necessarily providing complete market neutrality, there will be some movement with the market.

Low volatility hedge: an investing strategy that typically targets some kind of absolute-return objective, without reference to any market index and emphasizes capital preservation and risk control. Examples of low volatility hedging strategies include several arbitrage strategies (convertible, fixed income and statistical) as well as event driven strategies.

Mean variance optimization: a quantitative asset allocation technique developed by Harry Markowitz that creates optimal portfolios using return, risk and correlation forecasts to combine assets into portfolios that maximize return for different levels of risk. A graph of all optimal portfolios is called the efficient frontier.

Percentile: a value on a scale of one hundred that indicates the percent of a distribution that is equal to or below it.

Standard deviation: a statistical measure of the degree to which an individual value in a probability distribution tends to vary from the mean of the distribution; the larger the standard deviation, the greater the degree of dispersion around the average value.

Daily/monthly/quarterly liquidity: investment purchases and/or redemptions may be transacted once per day, month or quarter.

Illiquid: investment purchases accepted at the commencement of the investment program (e.g. limited partnerships) while redemptions may be transacted only at liquidation of the investment program, typically after a number of years.

HEPI: Higher Education Price Index.

CPI: Consumer Price Index.

Commonfund Allocation Planning Model™

Asset Class	Series	Start Date	End Date	Historical Annualized Return	Historical Standard Deviation
Large Cap Equity	S&P 500 Index	Jan 1970	Dec 2008	9.5%	15.4%
All Cap Equity	Russell 3000 Index (prior to 1/79 weighted 80% S&P 500, 20% Ibbotson Small Cap)	Jan 1970	Dec 2008	9.6%	15.9%
Small Cap Equity	Russell 2000 Index (prior to 1/79 Ibbottson Small Cap)	Jan 1970	Dec 2008	9.9%	20.7%
Public Real Estate	NAREIT - Equity REITS	Jan 1972	Dec 2008	11.2%	15.7%
International Equity	MSCI World ex U.S.	Jan 1970	Dec 2008	9.7%	17.0%
Emerging Markets Equity	MSCI Emerging Markets Equity	Jan 1989	Dec 2008	9.7%	23.6%
Private Equity	Venture Economics (buyouts)	Jan 1972	Dec 2008	11.5%	16.4%
Venture Capital	Venture Economics (venture capital)	Jul 1981	Dec 2008	13.9%	20.8%
Directional Hedge	Weighted HFRI Indices: 85% Equity Hedge, 15% Macro	Jan 1990	Dec 2008	11.7%	6.7%
Relative Value	Weighted HFRI Indices: 25% Event, 25% Relative Value Arb, 12.5% Distressed, 12.5% Equity Hedge, 12.5% Market Neutral, 12.5% Macro	Jan 1990	Dec 2008	11.6%	4.5%
Distressed Debt	50% NYU Altman Distressed Index, 50% HFRI Distressed Strategies	Jan 1993	Dec 2008	5.7%	10.9%
Commodities	Dow Jones-UBS Commoditiy Index	Jan 1970	Dec 2008	10.0%	14.9%
Natural Resources	Composite returns - CCI Energy program	Jan 1990	Dec 2008	14.3%	14.6%
Private Real Estate	NCREIF – Property Index (50% Leverage - finance at LIBOR + 150bps)	Jan 1978	Dec 2008	11.6%	7.5%
TIPs	Citigroup US Inflation Linked Securities (Bridgewater 1/90 – 3/97 history)	Jan 1990	Dec 2008	6.9%	4.8%
Core Bonds	Barclays US Aggregate Bond Index	Jan 1976	Dec 2008	8.5%	5.8%
Global Bonds	Citigroup World Government (greater than 1 Year)	Jan 1985	Dec 2008	9.1%	7.1%
Emerging Market Bonds	JPM Emerging Markets Bond Index	Jan 1991	Dec 2008	12.3%	14.7%
U.S. High Yield	Merrill Lynch High Yield Master (prior to 9/86 CSFB US High Yield)	Jan 1970	Dec 2008	8.3%	8.8%
HEPI	Higher Education Price Index	Jun 1970	Jun 2008	5.1%	2.1%

Note: For additional information on how Commonfund's APM compares to other asset allocation models, please refer to "How Efficient is Your Frontier?", a Commonfund white paper authored by the Commonfund Strategic Solutions Group.

Important Considerations

APM is only a model

- Returns generated are hypothetical
- Do not represent actual returns earned by any investor or investment fund
- Does not guarantee or assure any future investment results
- Should not be treated as a tool that can predict specific investment outcomes
- Output does not account for fees and expenses
- Output will vary as inputs change
- The asset classes depicted in the APM involve varying degrees of investment risk

APM is an analytical tool

- Assist investors in thinking about the potential distribution of returns of various investment strategies

IMPORTANT: The projections or other information generated by the Allocation Planning Model™ regarding the likelihood of various investment outcomes are hypothetical in nature, do not reflect actual investments and are not guarantees of future results. Results may vary with each use and over time. See APM Explanatory Notes and key definitions at the end of this presentation.

Additional Key Terms

Real Spend: Equals the current year nominal spending dollars less the previous year's nominal spending dollars grown at inflation.

Real Market Value: Equals the nominal market value (after spending) less the inflation adjusted market value (grown at CPI only).

Intergenerational Equity is calculated as the state in which the nominal market value (after spending) is equal to or greater than the inflation adjusted market value (grown at CPI only). When the net market value is 0, the portfolio has maintained real purchasing power or equilibrium.

IMPORTANT: The projections or other information generated by the Allocation Planning Model™ regarding the likelihood of various investment outcomes are hypothetical in nature, do not reflect actual investments and are not guarantees of future results. Results may vary with each use and over time. See APM Explanatory Notes and key definitions at the end of this presentation.

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Comparison of returns calculated on an IRR basis with returns on a time-weighted basis is not appropriate. For a description of the two return calculation methods see "Measuring Investment Returns, Time vs. Dollar-Weighted – What's the Difference?", a copy is available from Commonfund Capital.

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